

1993 DALL SHEEP BEHAVIORAL STUDY
PINGO LAKE NOATAK RIVER

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A great deal of the access to Gates of the Arctic National Park and Preserve is by aircraft, this involves low elevation flying, below 500ft, and high elevation overflights, above 500ft. In other areas high levels of aircraft traffic have been shown to adversely affect certain types of wildlife. In 1993 a preliminary survey was conducted to establish the feasibility of a study of the behavioral response of dall sheep to aircraft overflights. This was a groundwork survey to determine whether a more in-depth study was feasible and necessary. Sites were checked for accessibility, survey techniques and forms were utilized and adapted, and the use of unplanned aircraft overflights was critiqued and their frequency documented.

STUDY AREA

The area on the Noatak River half way between Pingo Lake and Okturak Creek (fig. 1) was chosen because of the combination of accessibility, sheep population and aircraft usage. In this area the Noatak is a broad glaciated valley with elevations ranging from 7192 feet to 1771 feet. On the northeast side of the valley steep crumbling cliff faces with rolling vegetated hills above provide good sheep habitat. There is significant aircraft usage of three lakes in this area: Pingo lake, Nelson Walker lake, and Twelve Mile slough. The use is mainly by cessna 185 and DeHavilland beavers on floats. Wheeled 206 and super cubs land on the gravel directly adjacent to the river. The major portion of the air traffic is coming from Bettles with a lesser number from Kotzebue and some from unknown areas. Maps of the actual area as well as pictures of the documented sheep areas are in Appendix I.

METHODS

Surveys were conducted from June 30 - July 4, 1993 and August 9 - 12, 1993. The observation team (two people) stayed on the valley floor where a clear view of three different groups of sheep was possible. The sheep were observed whenever they were visible between 9:00am and 11:30pm. During the first observation period an attempt was made to follow the sheep to their higher grazing area but this proved futile. When possible the composition, male/female and age, plus the number of sheep in the group were recorded. During the initial study period the sheep were observed for thirty minute blocks of time and their activities documented on the original forms (Appendix II). For the August study period the sheep were monitored every ten minutes, and eventually every five minutes, this allowed for a closer accountability and less loss of continuity, during this time period a new data form was used (Appendix III). They were documented as either grazing, resting or moving and activities such as butting heads or jostling for positions were also recorded. Each time a plane entered the survey area the time of arrival and departure, direction of travel, destination, whether it landed or not and plane description were recorded. The sheep were monitored while planes were in the area and their behavior documented. For observations a spotting scope, binoculars and visual counts were used.

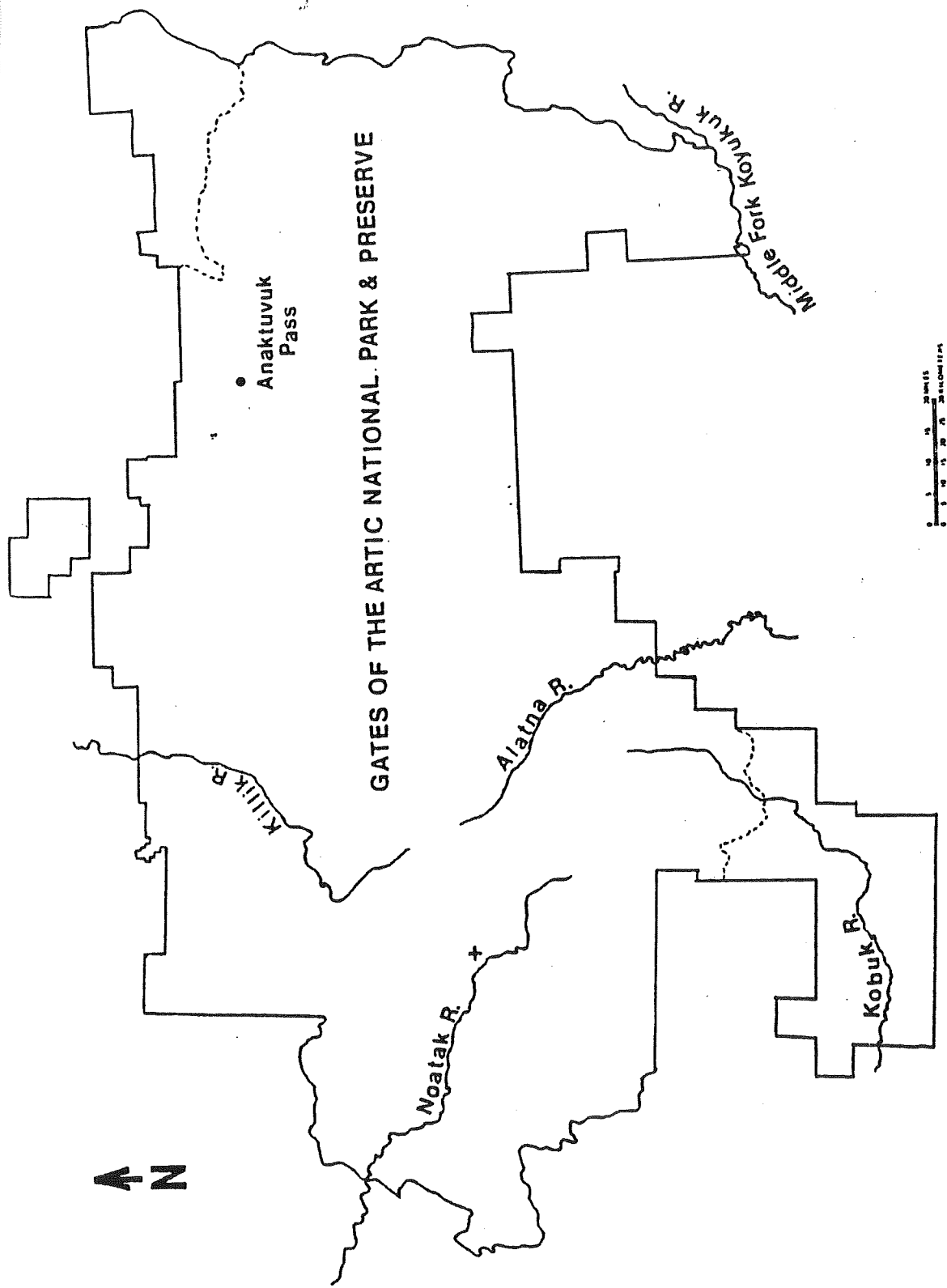


Fig. 1. Location of sheep survey, Gates of the Arctic National Park and Preserve, Brooks Range, AK, 1993. Survey area location is designated by "+".

RESULTS

The feasibility of conducting a dall sheep study in the area was tested. Sheep behavior was monitored while aircraft were flying by at high (above 500 feet) and low (below 500 feet) elevation and landing in the area. The data sheets were utilized and modified to meet the requirements of the situation. Methods for following the sheep were attempted and adapted to fit the terrain encountered.

Three major groups were identified and the observation centered around these areas. The largest group consisted of twenty eight sheep, twenty six rams and one ewe and lamb. This group was labeled "The Boys Club" and was closest to Otkurak creek. This group was by far the most consistent and easily followed. The "Pingo" group was directly above Pingo lake it was a mixed herd of males and females with lambs, the count went from nine to twenty six depending on the time of day. Between the two major groups was a smaller less easily defined group called the "Black Mountain" group they were a mixed group of males and females with usually five to seven members. All of the groups followed the same general pattern of resting in rocky southwest facing outcroppings in the morning and late evening and moving up to higher open grazing areas during the day. These patterns were disrupted during rainy periods and times of high winds. The cliff or rocky outcroppings seemed to provide protection while resting but not good grazing while the higher hills seemed to have better grazing.

Plane traffic was sporadic, unreliable and very weather dependent. On some days there were as many as seven flights, five of which landed in the area. Other days when the clouds were low and the passes closed there would be no traffic or just one plane.

DISCUSSION

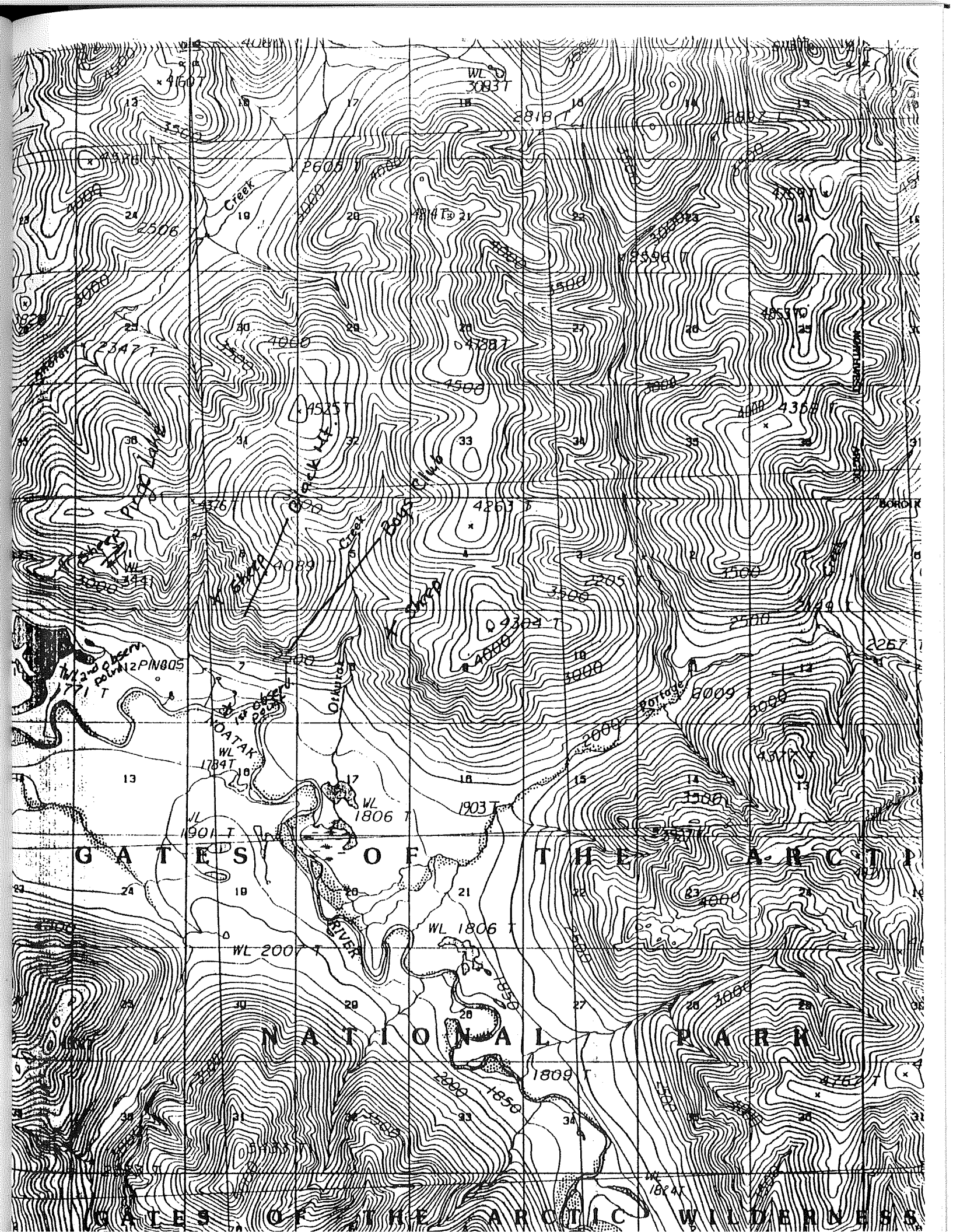
In general it would appear that the Pingo Lake area would be a good study site in that it has high aircraft use, an established sheep population and easy access for the observer. The drawback to the area would be the sheep populations pre-conditioning to aircraft overflights making it impossible to observe initial reactions.

Originally the study called for following the sheep as they moved during the day and tracking individual sheep, both of these proved to be impossible under the existing conditions. The group directly above the camp was comprised of twenty eight individuals (twenty six rams). Without some kind of physical marking distinguishing individuals only distinctly aged or in some way physically marked individuals could be visually isolated and tracked. At the same time any attempt at following the group resulted in the group moving away from the pursuer so was counter productive. It was observed that the sheep followed set daily patterns and so could be observed returning to certain areas and then data collected at these times. These patterns were observed during both study periods but were effected by weather.

During the study period the sheep did not show any outward signs of registering the air traffic that occurred. During the August observations caribou had moved into the area and the contrasting reactions to air traffic were noticeable. While the sheep never looked up or in anyway reacted the caribou would lift their heads as planes went over and move their heads in conjunction with the planes route of travel.

For a broader view of the sheep habitat and a good area for observing the group, both on its cliff and hillside grazing area, a move across the river would allow for general overall viewing but not for individual identification. This years site allowed for cliff site observation but not the higher grazing area.

Appendix I. Detailed location of dall sheep study area, map and photos, Gates of the Arctic National Park and Preserve, Brooks Range, AK, 1993.



GATES OF THE ARCTIC

NATIONAL PARK

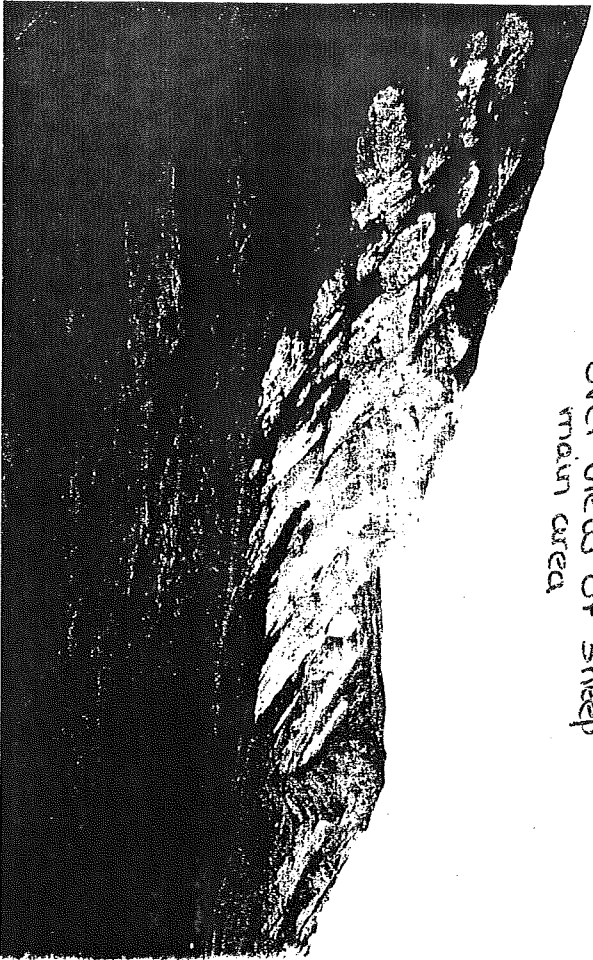
GATES OF THE ARCTIC WILDERNESS



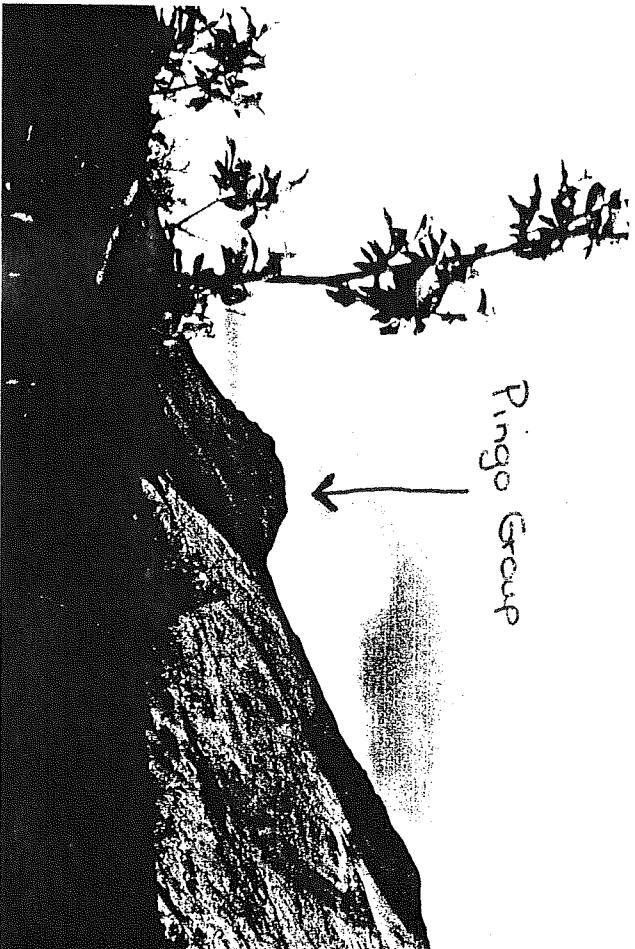
Boy Club Group.



Black Mt Group



OVER view of sheep
main area



Pingo Group

Appendix II. Data sheets used in study period one (6/30/93 - 7/4/93), Gates of the Arctic National Park and Preserve, Brooks Range, AK, 1993.

DALL SHEEP BEHAVIORAL OBSERVATION FORM

Week Day and Date: _____

Sheep Group: _____ (assign a letter to correspond with code on map)

Observers: _____

Observation #: _____

(number sequentially starting with "1" for each day)

Time: _____

(24 hour clock or "am/pm")

SHEEP #	AGE	SEX	ACTIVITY	COMMENTS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____

Observation #: _____

(number sequentially starting with "1" for each day)

Time: _____

(24 hour clock or "am/pm")

SHEEP #	AGE	SEX	ACTIVITY	COMMENTS
_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____

Note: For sheep bands greater than 12 in size, continue the sequential recording of data in subsequent blocks or on additional sheets as necessary, and indicate the observation number and "cont." in the "observation #" space.

Appendix III. Data sheets used during study period two (8/9/93 - 8/12/93), Gates of the Arctic National Park and Preserve, Brooks Range, AK, 1993.

SHEEP MAP NUMBERS

DATE

8/12/93

weather

p. cloudy breezy 40°
low clouds

HAP

* (see map) plane 3 miles away
below sheep

* plane 3 miles away / below sheep

Pingo Hill

group A

codes for grid

G = grazing
B = bedded
/ = moved out of sight
* = air traffic
S = standing

* plane 3 miles away / below sheep
" " "

* planes at least 1 mile away / high above
" "